PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Yasunori ANDO et al.

Group Art Unit: 1731

Application No.: 10/647,253

Examiner: J. HOFFMANN

Filed: August 26, 2003

Docket No.: 116942

For: COMPOSITIONS AND METHODS FOR MAKING MICROPOROUS CERAMIC MATERIALS

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

After entry of the Notice of Appeal filed herewith, Applicants request review of the Final Rejection mailed May 16, 2007 in the above-identified application.

I. Status of Pending Claims

Claims 1-9, 14-15, 17, 18 and 20-21 are pending in this application. Non-elected claims 1-9 and 20 have been withdrawn from consideration. Claims 14, 15, 17, 18, and 21 are rejected.

II. Grounds of Rejection Presented for Review

The Office Action rejects claims 14, 15, 17, 18 and 21 under 35 U.S.C. §103(a) over JP A 01-188479 ("Kato") in view of U.S. Patent No. 5,746,969 to Schonfelder et al. ("Schonfelder"), U.S. Patent No. 5,298,470 to Chia et al. ("Chia"), and U.S. Patent No. 4,207,306 to Jarcho ("Jarcho"). In addition, claim 17 is also rejected under 35 U.S.C.

§103(a) over Kato in view of Schonfelder, Chia, Jarcho, and further in view of Kingery, "Introduction to Ceramics," page 9 ("Kingery").

Independent claim 14 is directed to a method for making a microporous ceramic material having an average micropore size in the range from 0.8 μm to 1.2 μm and a porosity in the range from 35 vol% to 40 vol% used as a substrate of a ceramic membrane used for gas separation, the method comprising: preparing a composition consisting essentially of a metal silicon powder, a silicon nitride powder, and both a yttrium oxide powder and an aluminum oxide powder as oxide powders such that a molar ratio of the yttrium oxide to the aluminum oxide is in a range of from about 0.8 to 1.2, wherein a mixing ratio of the metal silicon powder and the silicon nitride powder is 10 parts or more, but less than 100 parts, of the metal silicon powder with respect to 100 parts of a total amount of the silicon nitride powder in a mass ratio, and the content of the oxide powders is an amount corresponding to 2 mass% or more, but less than 250 mass%, of the content of the metal silicon powder, and not more than 20 mass% of the total amount of the metal silicon powder, the silicon nitride powder and the oxide powders, and an average particle size of each of the metal silicon powder and the silicon nitride powder contained in the composition is in a range from 1 μm to 50 μm, molding the composition into a molded product, and subjecting the molded product to reaction sintering in an atmosphere that allows nitriding and in a temperature range from 1200°C to 1500°C for two hours or more, but less than 12 hours. The claim further specifies that the reaction sintering is performed by heating the molded product in the atmosphere from room temperature to 700°C or more, but less than 900°C at a temperature increase rate of 2°C/min or more, but less than 10°C/min; further heating the product in the atmosphere to 1200°C or more, but less than 1500°C at a temperature increase rate of 1°C/min or more, but less than 5°C/min; and thereafter storing the sintered product in the atmosphere in said temperature range. Such a method is not taught or suggested by the cited references.

The Office Action asserts that the specific heating parameters outlined in claim 14 would have been obvious over Kato, in view of Schonfelder, Chia, and Jarcho. In the April 3, 2007 Amendment, responding to the December 5, 2006 Office Action, Applicants clearly enumerated the deficiencies that arose from the combination of Kato, Schonfelder, and Chia, along with detailed arguments. For a detailed analysis of these references, please see the April 3, 2007 Amendment. In brief, the references do not teach or suggest the claimed reaction sintering process, and Chia and Schonfelder are improperly combined.

The Office Action further asserts that the addition of Jarcho provides a new ground for rejection because it cures the features that the above references fail to address, namely specific heating parameters and porosity outlined in claim 14. Applicants disagree.

First, the Office Action asserts that Jarcho teaches that optimization of heating parameters is not a matter of innovation, but a matter of easy determination by a technician in the art. However, Jarcho actually teaches that the temperature and duration of sintering are critical and specific to the particular ceramic referenced. Jarcho thus provides no reason for changing the heating parameters of the specific ceramics of the cited references in order to practice the claimed invention.

Second, the Office Action also asserts that the specific porosity outlined in claim 14 would have been obvious and a mere scaling up of a prior art reference. This is a false assertion. None of the references address micro pore size and concentration. As such, the references cannot serve as a point from which to "scale up."

Finally, the Office Action asserts that because the claimed invention is a reaction to a market pressure to solve a problem, it is a product of ordinary skill and common sense. In this assertion, the Examiner attempts to apply new law from the recent Supreme Court case, KSR v. Teleflex. In the KSR decision, the Court states:

> When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product [is] not of innovation but of ordinary skill and common sense. KSR v. Teleflex, 127 S.Ct. 1727, 1742 (2007).

However, the Examiner did not apply this case properly because he failed to identify a finite number of predictable solutions for the problem this invention solves, a requirement for applying this proposition.

III. Conclusion

For all of the reasons discussed above, it is respectfully submitted that the obviousness rejections are in error and that all the pending claims are in condition for allowance. Applicants respectfully request the panel of Examiners to allow this application.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Jeffrey R. Bousquet
Registration No. 57,771

JAO:RRB/gml

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OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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